Contents lists available at www.innovativejournal.in

INTERNATIONAL JOURNAL OF NURSING DIDACTICS

Homepage: http://innovativejournal.in/index.php/ijnd

ISSN: 2231-5454

The correlation between Case-care Method and Patient Safety in Wards

Haniyeh Nazem[1], Abasat mirzaei[2,3*]

MSc of Forensic- Midwife, School of Nursing and Midwifery, Shahid Beheshti University of Medical Sciences, Tehran, Iran.
Assistant professor, Department of Health Care Management, Faculty of Health, Tehran Medical Science, Azad University, Tehran, Iran
Assistant professor, Health economic policy research center, Tehran medical sciences, Azad University, Tehran, Iran.

DOI: https://doi.org/10.15520/ijnd.v11i04.3282

Abstract: Objectives: Patient safety is one of the principles of the health system that requires several matrices. Nurses, on the other hand, are the most influential group in the care of patients, which due to safety in nursing care will reduce accidents and injuries. Therefore, care methods can be a good way to implement patient safety guidelines. One of these methods is the Case-care Method that is utilized by the Ministry of Health. On the other hand, it is necessary to implement Nine patient safety solutions in health care centers. The purpose of this study was to determine the relationship between the case-care method and the implementation of Nine patient safety solutions.
Methods: This study evaluated the relationship between the case-care method and the implementation of Nine patient safety solutions in Farhikhtegan, Bu Alim, Amir al Momenin Hospitals' wards by using the standard checklists and data analyzed using correlation test and linear regression.
Results: There was a significant correlation between the two variables and 31.4% of patient safety solutions were covered by Case-care Method. There was also a relationship between these two variables in the internal and intensive wards, but in the surgical ward, there was no significant relationship.
Conclusion: The case-care method provides a foundation for nursing services such as patient safety and improving their quality. Therefore, to improve the patient's safety, it is necessary to use proper care methods base on the conditions of each ward.

Keywords: Nursing care, Case-care Method, Patient safety, Nine solutions of patient safety.

INTRODUCTION

Patient safety is a global health concern that affects patients in all aspects of health services around the world (1). The provision of health services for patients is designed to improve the level of human health and does not seem to be related to accepting errors.
On the other hand, the health care system is a collection of health care workers, specialists, structures, components, and multiple relationships in which the occurrence of errors is inevitable (2).

Patient safety is not a new concept for healthcare providers. Following the IOM report in 1999, the issue of patient safety came to the attention of researchers and health experts. The report shows that more than one million preventable traumatic events have occurred in the United States, which between 44,000 and 98,000 patients dying from preventable adverse events. This result is approved in the USA, Canada, Australia, New Zealand, Australia, and Denmark(3). The impact of this report was such that the issue of patient safety was immediately declared a national priority in the United States and one of the top priorities of the World Health Organization (WHO) in all countries. After this event, several centers and organizations were set up to implement patient safety standards in health care centers (4). According to the latest data from 2018, the World Health Organization estimates that about 421 million hospitalizations occur annually in hospitals around the world, and approximately 42.7 million of the number of harmful cases occur during these hospitalizations, and according to the latest findings, damage to patients is the fourteenth cause of mortality in the world. (5)

In Iran, although there is no statistics document on the amount and type of errors in the field of the hospital, and experts speculate that this rate is very high that the increase in referral cases of doctors and nurses to the medical system and courts is evidence of this claim. Raw statistics of medical errors in 2011 were announced to show a 12% increase in errors in 2010 compared to 2009(6).
One of the basic conditions and the most important necessary for providing health services is not to harm the patient during care. (8) On the other hand, nurses are one of the most influential groups of health staff who have a significant impact on patients' safety and recovery through principled care. (7). The Case-care Method is the first and oldest system of patient-centered clinical services and due to the stabilization of nursing services and care and accelerating the meet patient's needs and mutual trust between patient and nurse significantly increase patient and nursing satisfaction. (4)

One of the disadvantages of this method is that the patient has different nurses in different shifts and there is no guarantee that the nurses will have the same patient as the previous day. This method emphasizes the implementation of the doctor's prescriptions and the nurse is responsible for planning, organizing, and performing care during his shift work, and if the patient does not remain up to the next days, the care and proper communication between the patient and the nurse will not be established. (9)

On the other hand, patient safety is one of the quality dimensions of service in hospitals, and methods of division of labor of nursing care are the method of serving patients. Both issues are enforceable by the Ministry of Health. Unfortunately, this issue has not been well pondered by Iranian researchers in hospital centers as important as is. The present study aims to determine the relationship between the Case-care Method and patient safety in Farhikhtegan hospital.

METHODS

This study was conducted as field research and observation between September 2019 to February 2020. The study population was active wards in Farhikhtegan, Bu Alim, Amir al Momenin Hospitals included internal wards (gastrointestinal, lung, kidney and urinary tract, infectious, neurology, etc.) surgical wards (orthopedics, Brain, and Nerves, general, lung, women, etc.), and special wards (CCU heart, ICU internal, ICU surgery) and a total of 86 wards.

All wards were considered as inclusion criteria and clinical wards in which Case-care Method is not provided were considered as exclusion criteria. So We opted 34 wards as a sample (Table 1).

The data collection tool was developed based on the National Guidelines for Patient Safety and the Instruction of Case-care Method, interviewing with experts by the researcher as follows:

- Demographic Information Questionnaire of the ward including the number of active beds and their number, the average number of beds per day, and percentage of bed occupancy, services provided, number of staff, average shift per month.
- The checklist of considering the status of case-based nursing care implementation in the determined wards includes 12 questions on the Likert scale (yes, to some extent, and no).
- The checklist of considering the status of Nine patient safety solutions in the determined wards includes 68 questions on the Likert scale (yes, to some extent, and no).

Regarding that, the checklists are compiled from the clear content of national instructions and the opinion of nursing experts, so it can be claimed that this tool is valid.

To assess the reliability of the questionnaire, Cronbach's alpha coefficient was used(α=87.7%). So, the reliability of the research tool was confirmed.

The checklists were completed by three nursing experts who were qualified in both patient safety and nursing care after coordinating with the relevant responsibles in the sample wards at the beginning of each shift between February and March in 2016.

These checklists should be completed by expert and independent evaluators to ensure the results.

The variables of this study were also defined as follows:

- The rate of implementation of the Case-care Method in the ward as an independent variable
- The rate of implementation of Nine patient safety solutions in the ward as a dependent variable
- Type of clinical ward as a moderating variable

The main points of the implementation checklist of Nine patient safety solutions were:

1. Pay attention to drugs with similar names and pronunciations
2. Pay attention to the patient's characteristics to prevent errors
3. Effective communication at the time of patient delivery
4. Perform the correct procedure in the correct part of the patient’s body
5. Control the concentration of electrolyte solutions
6. Assuring medication accuracy at transition in care
7. Avoiding catheter and tubing misconnections
8. Use injection equipment only once
9. Improving hand hygiene (10).

The checklist of expected operations in the case nursing care method in clinical wards was:

1. Classifying patients in terms of quantity and quality of the need for nursing services
2. Classifying nurses in terms of professional competencies
3. Assigning patients to nurses by observing the condition of justice in the treatment
4. Specific registration of care performed by nurses
5. Following gender adaptation in nurses and patients
6. Informing the patient about his / her nurse and introducing to the patient
7. Existence and implementation of the replacement system at the time of leaving the workplace of the nurse that includes:

a. Using the task method in moving the patient between wards for example for performing MRI and so on. Assigning special nurses or paramedics to do these things in each ward and not leaving the place in charge of the patient

b. Nurse should assign his/her tasks at the time of leaving the workplace to other nurses

8. Continuous monitoring of nurses' performance and the process of improving assigned patients
9. Continuous and monthly monitoring of case implementation in the ward and record reports to the nursing office (11)

To obey ethical principles, all the head nurses of the studied wards were given a checklist about the objectives of the research, exclusion from the study if they did not wish, non-disclosure of the ward name, and the name of the hospital before collecting information.

The correlation coefficient is used to calculate the correlation between the two variables (patient safety and Case-care Method). As the scale of the variables was ordinal scale, the Spearman correlation method was appropriate. Data were analyzed by SPSS V. 25 software. $P \leq 0.05$ was regarded as significant in this study.

RESULTS

Due to the non-normality of the data, using the normal community average hypothesis test was not possible, so the simple mean was used to classify the variables.

Table 1: Details of the wards in the research sample

Hospital	Internal ward	Surgery ward	special wards	total
Farhikhtegan	6	5	6	17
Bu Alim	4	2	2	8
Amir al Momenin	4	3	2	9
total	14	10	10	34

The classification was defined as appropriate (less than 1.480), somewhat (average 1.481 to 2.520), and inappropriate (2.521 and above). If the hospital wards are more than 90, the normal community average hypothesis test can be used. (Table 2)

Table 2: Relationship between the nine patient safety solutions and Case-care Method

Variable	Surgery ward	Internal ward	special wards	total
Similar and high-risk drugs	Appropriate (1.057)	Appropriate (1.082)	Appropriate (1.071)	Appropriate (1.051)
Correct identification of the patient	Appropriate(1.48)	to some extent (1.486)	Appropriate(1.14)	Appropriate (1.361)
Effective communication at the time of patient delivery	Appropriate (1.311)	Appropriate (1.246)	Appropriate ((1.158	Appropriate (1.209)
Monitoring the correct procedure in the correct place of the patient's body	to some extent (1.667)	Appropriate (1.429)	Appropriate (1.407)	to some extent ((1.488
How to maintain and control the concentration of electrolyte solutions	to some extent (1.533)	to some extent (1.49)	Appropriate((1.40	Appropriate(1.439)
Avoid improper connections of catheters and tubes	Appropriate(1.100)	Appropriate(1.188)	Appropriate (1.05)	Appropriate(1.109)
Use of disposable devices	Appropriate(1.063)	Appropriate(1.045)	Appropriate(1.05)	Appropriate (1.031)
Ensure the correctness of drug therapy in the patient transition stages	Appropriate(1.467)	to some extent(1.5)	Appropriate(1.283)	Appropriate((1.400
Improve hand hygiene	to some extent (1.486)	Appropriate(1.378)	Appropriate(1.243)	Appropriate(1.339)
Patient Safety	Appropriate(1.34)	Appropriate(1.315)	Appropriate(1.206)	Appropriate(1.256)
Case care	Appropriate(1.358)	Appropriate(1.25)	Appropriate(1.258)	Appropriate(1.257)

It is showed in Table 2 that in the special wards, all Nine patient safety solutions and Case-care Method were appropriate.

Table 3: The Case-care Method variable by ward type

Variables of patient safety	Case-care Method variable			
	Surgery ward	Internal ward	special wards	total
Similar and high-risk drugs	(0.352) -0.33 [i]	(0.305) 0.295	(0.462) 0.264	(0.605) 0.092
Correct identification of the patient	(0.332) 0.343	(0.571) 0.166	(0.824) -0.081	(0.389) 0.153
Effective communication at the time of patient delivery	(0.411) 0.293	(0.986) 0.005	(0.564) 0.208	(0.224) 0.214
Monitoring the correct procedure in the correct place of the patient's body	(0.019) 0.718* [ii]	(0.062) 0.511	(0.01) 0.799** [iii]	(0) 0.669**
How to maintain and control the concentration of electrolyte solutions	(0.993) -0.003	(0.032) 0.575*	(0.113) 0.533	(0.015) 0.412*
Avoid improper connections of catheters and tubes	(0.406) 0.296	(0.109) 0.448	(0.201) 0.442	(0.025) 0.385*
Use of disposable devices	(0.375) -0.315	(0.808) 0.072	(0.766) -0.108	(0.459) -0.131
Ensure the correctness of drug therapy in the patient transition stages	(0.288) 0.373	(0.009) 0.665**	(0.109) 0.538	(0.002) 0.504**
Improve hand hygiene	(0.959) -0.019	(0.141) 0.414	(0.018) 0.726*	(0.023) 0.389*
Summary of implementation of 9 patient safety solutions	(0.527) 0.228	(0.027) 0.589*	(0.013) 0.749*	(0.002) 0.506**

Table 4: R^2 values based on the significance of the linear regression test by segments

Ward	The coefficient of determination	β	Significance of regression	Effect
Surgery	0.166	0.252	0.243	□
Internal	0.474	0.365	0.007	✔
special	0.461	0.404	0.031	✔
total	0.314	0.345	0.001	✔

DISCUSSION AND CONCLUSION

Nursing care methods can be the base for implementing patient safety standards or other quality issues that can improve the treatment procedures. In surgical departments (orthopedics, neurology, general, lung, gynecology, etc.), there only was a significant relationship between the solution "monitoring correct procedure in the correct part of the patient's body" and "Case-care Method"; independent variable covers a low percentage of changes in the dependent variable. Therefore, case care does not affect the implementation of 9 patient safety solutions in surgical wards.

In the internal wards (gastrointestinal, lung, kidney and urinary tract, infectious, neurological, etc.) components of "Control the concentration of electrolyte suspensions " and "Ensuring the accuracy of drug therapy in the transitional stages ", "summarizing the implementation of Nine patient safety solutions" and "the case care method" had a significant relationship; On the other hand, 47.4% of the changes in the implementation of Nine patient safety solutions were covered by the Case-care Method.

The Nine patient safety solutions in intensive care wards (CCU heart, ICU internal, ICU surgery) had the most powerful relationship with the Case-care Method of nursing among the two other groups. The components of "the correct procedure in the correct part of the patient's body, Improving hand hygiene and summarizing the Nine patient safety solutions" had a significant relationship with the independent research variable; On the other hand, 46.1% of the changes in the implementation of Nine patient safety solutions were covered by the Case-care Method. The nurses in this ward were more expert, so both the Nine patient safety solutions and Cascare Method are in appropriate condition.

The study of Hall LM et al. (12), showed that a higher proportion of professional nurses in the staff mix (RNs/RPNs) on medical and surgical units in Ontario teaching hospitals are associated with lower rates of medication errors and wound infections. The results of the present study were in line with this study.

Finally, a summary of 9 patient safety solutions was measured and correlated with the Case-care Method. The components of "monitoring the correct procedure in the correct part of the patient's body, how to maintain and control the concentration of electrolyte solutions, avoiding catheter and tubing misconnections, assuring medication accuracy at transition in care, and improving hand hygiene and conclusion" had a correlation with the Case-care Method and had no significant relationship with other components. Also, 31.4% of changes in the implementation of 9 patient safety solutions are covered by the Case-care Method.

The study of Oliveira IV et al in 2020 (13), stated that one of the pillars of safe nursing care is prioritizing patients' needs. In the present study, the division of nurses' work based on the level of patient care had a significant correlation with two of the 9 patient safety solutions. Also, another factor of safe care is the adaptation of the case-care method with patient safety requirements. The result of the present study showed the significant relationship between the Case-care Method and Nine patient safety solutions as a requirement for patient safety and was in line with Oliveira IV's study.

Hemmati's study (14) stated that there was a significant relationship between nurses' communication skills and patient safety. In the present study, a significant relationship between the case-care method-in which the relationship between a nurse and a patient was the main factor-and 5 out of the 9 patient safety solutions.

In the surgical wards, nursing care on a case-by-case basis did not have a significant effect on the implementation of 9 patient safety solutions, while in the other wards was not like this. The reason can be the different duties description of the nursing in surgical wards in comparison with internal and special wards. In these wards, the patient's recovery depends on nursing care more, so both the method of nursing care and the quality of nursing services are very important. In the surgical wards, due to the specificity of the disease and its complications, as well as the patient's alertness, either nursing care is easier than in other wards and performing patient safety principles (such as proper medication, correct identification of the patient, proper communication with the patient, concentrations of drugs and electrolytes, knowing the patient and its recovery process) do not affect on success or failure of treatment. Providing nursing care in the internal and special wards, due to uncertainty about the type of disease and consequently the method of treatment, requires more observation and management in nursing services(15).

In the case-care method, the patients are divided according to their needs and nurses' level of skills and knowledge. The case-care method is suitable for wards where the ailment is complicated, or the individual has several diseases and complications. This method is the oldest and best approach to the dividing of duties to treat patients in internal and special wards. The most important advantage is to create a suitable learning environment for students, in the opposite, the most disadvantageous is needing a large number of educated and qualified staff who are usually engaged in special wards and internal wards(16).

Implementing Nine patient safety solutions, like other nursing activities, requires different tacts, including management of nursing services and care, equipment, nursing processes, how to provide nursing services, and so on. The Case-care Method of nursing services in special wards and internal wards is suitable for promoting patient safety, however, in surgical

wards, due to the duty-based of nursing services, it is more appropriate to use the duty of care method.
This study showed that the methods of providing nursing care had a significant relationship with the implementation of Nine patient safety solutions.

Another important point that guarantees both the case-care method and the implementation of Nine patient safety solutions is the professionalism of the ward nurses and the work environment. Only in the special wards, it can be seen that the status of all research components is appropriate.

In conclusion, it seems that the implementation and enforcement of any standards in the workplace require capable, qualified staff, and a professional environment in which fundamental principles are prioritized over other issues.

Limitations:

We would like to carry out the study in more hospitals to prove the advantages of using case-care method and patient safty in the healing process but coordination and persuasion the managers was not feasible.

Recommendations:

There are some suggestions for next studies. One of them is to investigate the relationship between two mentioned variables after leaving hospital. Another one is to consider the correlation of them in the healing process of covid-19 patients.

Acknowledgments:

The authors would like to thank the managers of the hospitals and their staff for their cooperation in conducting the study.

Authors'note:
This article is based on independent research with no financial aid.

Contributorship:
Haniyeh. N was a major contributor in writing the manuscript and analyzed the data. Majid. N was writing and revising the manuscript. Abasat. M was the Research supervisor and revising the manuscript.

Declaration of conflicting interests:

The author(s) declared no potential conflicts of interest concerning the research, authorship, and/or publication of this article.

Ethical approval:

Not applicable.

Funding:
The author(s) received no financial support for the research, authorship, and/or publication of this article.

Guarantor:
AM.

ORCID iD:

Abasat Mirzaei https://orcid.org/0000-0002-1422-5193

Peer review:

This manuscript was reviewed by reviewers who have chosen to remain anonymous

REFERENCES

[1]. Aiken LH, Clarke SP, Sloane DM, Lake ET, Cheney T. Effects of hospital care environment on patient mortality and nurse outcomes. The Journal of nursing administration. 2008 May;38(5):223.

[2]. Kalender ZT, Tozan H, Vayvay O. Prioritization of medical errors in patient safety management: Framework using interval-valued intuitionistic fuzzy sets. healthcare 2020 Sep (Vol. 8, No. 3, p. 265). Multidisciplinary Digital Publishing Institute. Lark ME, Kirkpatrick K, Chung KC. Patient safety movement: history and future directions. The Journal of hand surgery. 2018 Feb 1;43(2):174-8.

[3]. Zaboli R, Karamali M, Salem M, Rafati HA. Risk management assessment in selected wards of hospitals of Tehran. Iranian Journal of Military Medicine. 2011 Jan 1;12(4):197-202.

[4]. . Hashemi F, NikbakhtNasrabadi A, Asghari F. The obstacles of reporting nursing errors in Iran: a qualitative study. Iranian Journal of Medical Ethics and History of Medicine. 2011 Apr 10;4(2):53-64.

[5]. World Health Organization. Patient safety tool kit. World Health Organization. Regional Office for the Eastern Mediterranean; 2015.409/10575

[6]. Kaafarani HM, Itani KM, Rosen AK, Zhao S, Hartmann CW, Gaba DM. How does patient safety culture in the operating room and post-anesthesia care unit compare to the rest of the hospital?. The American Journal of Surgery. 2009 Jul 1;198(1):70-5.

[7]. Shamsadini Lori A, Osta A, Atashbahar O, Ramazani S, PourAhmadi M, Ahmadi Kashkoli S. Patient safety culture from the viewpoint of nurses of teaching hospitals affiliated with Shahid Beheshti University of Medical Sciences. Journal of Health Based Research. 2016 Jun 10;2(1):81-92.

[8]. World Health Organization. "Patient safety assessment manual." (2016).

[9]. World Health Organization. Patient safety: making health care safer. World Health Organization; 2017. 10575/409/D.

[10]. Gilavand A. Evaluating the process of recruiting faculty members in universities and higher education and research institutes affiliated to Ministry of Health and Medical Education in Iran. World Family Medicine Journal: Incorporating the Middle East Journal of Family Medicine. 2017 Oct;99(5480):1-5.

[11]. Hall LM, Doran D, Pink GH. Nurse staffing models, nursing hours, and patient safety outcomes. JONA: The Journal of Nursing Administration. 2004 Jan 1;34(1):41-5

[12]. Oliveira IV, Nascimento YD, Ramalho-de-Oliveira D. Decision-Making Process in Comprehensive Medication Management Services: From the Understanding to the Development of a Theoretical Model. Pharmacy. 2020 Dec;8(4):180.

[13]. Hemmati-Maslakpak M, Sheikhbaglu M, Baghaie R. Relationship between the communication skill of nurse-patient with patient safety in the critical care units. Journal of clinical nursing and midwifery. 2014;3.

[14]. Hughes R, editor. Patient safety and quality: An evidence-based handbook for nurses. Rockville, MD: Agency for Healthcare Research and Quality; 2008 Apr.

[15]. Fukada M. Nursing competency: Definition, structure and development. Yonago acta medica. 2018;61(1):001-7.

[i] The values in parentheses are the value of Sig or Pvalue in SPSS software. If this value is less than 0.05, the relationship between the variables will be significant.

[ii] Single star sign: Significance of the relationship between two variables at an error level of 5%

[iii] Two star sign: Significance of the relationship between two variables at an error level of 1%